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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/679,664	10/03/2000	Thomas M. Stormann	072827-1801	7662

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EXAMINER	
LANDSMAN, ROBERT S	
ART UNIT	PAPER NUMBER
1647	

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/679,664	STORMAN ET AL.	
	Examiner	Art Unit	
	Robert Landsman	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11 and 42-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 42-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Formal Matters

A. The Amendment dated 10/29/04 has been entered into the record.

B. Claims 1-11 and 42-62 are pending and are the subject of this Office Action.

C. All Statutes under 35 USC not found in this Office Action can be found, cited in full, in a previous Office Action.

2. Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

A. Claims 1-11 and 42-62 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific or substantial asserted utility or a well established utility. Page 15 of the specification does discuss that fusion proteins which are linked to non-native G-proteins can be used to study the effects of the claimed chimeras. However, it is not understood what the specific or substantial utility is of studying a system with non-naturally occurring components. In other words, it is not clear what useful information can be gathered by setting up a system in which the G-protein does not normally interact with one or more of the proteins in the chimera. It is not clear what useful information can be extrapolated to this receptor when it is coupled to the G-protein to which it normally associates.

3. Claim Rejections - 35 USC § 112, first paragraph - enablement

A. Claims 1-11 and 42-62 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific or substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

B. Claims 1-11 and 42-62 remain rejected for the reasons already of record on pages 2-3 of the Office Action mailed 4/29/04. Applicants generally argue that the Examiner has merely set forth specific questions regarding the invention and has not set forth a prima facie case of undue experimentation. Applicants' arguments are deemed persuasive in part. All issues regarding "percent identity" have been withdrawn. While the Examiner agrees that some experimentation may be required when practicing the claimed invention, Applicants have not provided a single working embodiment regarding functional intracellular domains which can be as few as 10 residues, nor have Applicants submitted a Declaration to this effect. According to page 5 of the specification, SEQ ID NO:11-15 are intracellular domains. However, the size of these sequences range from 65 to 216 residues. Seventy-five percent of the smallest sequence is 49 residues, which is substantially greater than the 10 recited in the claim. Given that the intracellular domain is substantially smaller than the smallest of the disclosed sequences (10 vs. 49) it is not predictable to the artisan which residues would be critical to retain the function of this, or any other intracellular loop.

In fact, on page 11 of Applicants' response dated 2/9/04, they stated that they would submit a Declaration "as soon as possible" attesting to the fact that 10 residues can produce a functional intracellular loop. Respectfully, if this is well known in the art, it is not understood why such a Declaration has not been submitted.

C. Claims 1-11 and 42-62 are rejected under 35 U.S.C. 112, first paragraph, because the specification, even if enabling regarding the above paragraph, for methods which use a native CaR, mGlu or GABA ligand, does not reasonably provide enablement for the methods using any ligand – as recited in the independent claims. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

The breadth of the claims is excessive with regard to Applicants claiming methods of using chimeric fusion receptors which **can bind any ligand**. The breadth of the claims is already large since the extracellular, transmembrane and intracellular loops only have to be 75% identical to their wild-type receptors. The artisan would be able to identify functional receptors given the teachings in the specification as well as the knowledge in the art. However, there is no requirement that the chimeric receptor needs to bind to a ligand which would normally bind to one of these three receptors. Therefore, Applicants could produce receptor chimeras, or entire native receptors which bind to ligands from

different types of receptors. The specification does not provide and guidance or working examples of chimeric receptors which bind to other than their native ligands, nor is it predictable to the artisan how to make a chimeric receptor, or any receptor, which does not have the requirement of binding a specific ligand.

Therefore, due to the breadth of the claims regarding the types of ligands that these receptors are required to bind, along with the lack of guidance and working examples of receptors which bind to other than their native ligands as well as the lack of predictability to the artisan how to make a functional receptor which can bind "any and all" ligands, the Examiner holds that undue experimentation is required to practice the invention as claimed.

4.Claim Rejections - 35 USC § 112, first paragraph – written description

A. Claims 1-11 and 42-62 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

These are genus claims. The specification and claims do not indicate what distinguishing attributes are shared by the members of the genus (i.e. **to which known ligand the receptor is to bind**). Thus the scope of the claims includes numerous structural variants, and the genus is highly variant because a significant number of structural differences between genus members is permitted. Although these types of changes to the receptors are routinely done in the art, the specification and claims do not provide any guidance as to what changes should be made. Structural features that could distinguish compounds in the genus from others in the protein class are missing from the disclosure since there is no requirement for the binding of a specific ligand. No common structural attributes identify the members of the genus with regard to a known ligand. The general knowledge and level of skill in the art do not supplement the omitted description because specific, not general, guidance is what is needed. Since the disclosure fails to describe the common attributes or characteristics that identify members of the genus, and because the genus is highly variant, "binding of a ligand" alone is insufficient to describe the genus. One of skill in the art would reasonable conclude that the disclosure fails to provide a representative number of species to describe the genus. Thus, Applicant was not in possession of the claimed genus at the time the invention was made.

5. Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

A. Claims 1-11 and 42-62 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: any result on the G-protein. The claims recite that ligand binding is transduced to the intracellular domain. However, there is no step which relates the invention to the role of a G-protein, for example, "and wherein the G-protein is phosphorylated," or "and wherein the G-protein binds GTP and is activated."

Advisory information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Landsman whose telephone number is (571) 272-0888. The examiner can normally be reached on M-Th 9 AM-6 PM (eastern); alt F 9 AM-6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brenda Brumback can be reached on 571-272-0961. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Robert Landsman
Primary Examiner
Art Unit 1647

ROBERT LANDSMAN
PATENT EXAMINER